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EXAMINER	
SINCLAIR, DAVID M	
ART UNIT	PAPER NUMBER
2835	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/599,936	OWEN ET AL.	
	Examiner	Art Unit	
	DAVID M. SINCLAIR	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 January 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 13 January 2011 have been fully considered but they are not persuasive.

Applicant argues the combinations made by the examiner. Applicant argues that one of ordinary skill in the art would not have combined the aqueous electrolyte taught by Anderson with the electrochemical cells of Sugnaux and Zaghib. Specifically applicant argues that Sugnaux and Zaghib teach away from such a combination as both Sugnaux and Zaghib disclose the use of a non-aqueous electrolyte. The examiner agrees that Sugnaux and Zaghib disclose non-aqueous electrolytes but does not agree Sugnaux and Zaghib teach away form an aqueous electrolyte. Sugnaux and Zaghib do not disclose that an aqueous electrolyte can't be used in the electrochemical cells disclosed or would cause the electrochemical cells disclosed to be inoperable. Applicant further argues that aqueous electrolytes and non-aqueous electrolytes will give different results and therefore one of ordinary skill in the art would not have any reasonable expectation of success with some degree of predictability. The examiner disagrees that one of ordinary skill in the art would not have reasonable expectation of success with some degree of predictability. Specifically one of ordinary skill in the art would expect to obtain an electrochemical cell which is capable of storing energy. The examiner further notes that one of ordinary skill in the art knows the advantages and disadvantages of both aqueous and non-

aqueous electrolytes and would choose an electrolyte-type based on their particular needs. Applicant argues “Anderson discourages the use of titanium oxide due to its low conductivity unless its performance is improved by employing "lithium intercalation and organic electrolytes" (emphasis added)(column 7, lines 44-54)”. The examiner notes Anderson discloses titanium dioxide may be less desirable than other oxides based on its low conductivity and that said conductivity can be improved via organic electrolytes, but Anderson never discloses that the titanium oxide will not be useable in an aqueous electrolyte. Sugnaux and Zaghib further both disclose the addition of a conductive additive to improve the conductivity of the titanium oxide electrode. The examiner further notes USPAT 6,275,371 which discloses an electrochemical capacitor comprising titanium oxide electrodes and alkaline aqueous electrolytes which would include LiOH.

Applicant further argues “Bekesh merely discloses that metal oxides, such as titanium oxide, can be added to the electrodes of capacitors to reduce internal resistance. However, there is no disclosure in Bekesh as to what kind of capacitor devices could be treated with this additive". The examiner notes that Bekesh is drawn to a double-layer capacitor. The examiner further notes that double layer capacitors employ an electrolyte including aqueous electrolytes. Applicant further stated “Furthermore, as discussed above, Anderson discourages the use of titanium oxide due to its low conductivity unless its

performance is improved by employing "lithium intercalation and organic electrolytes" (emphasis added)(column 7, lines 44-54). Thus, the only disclosure in either Bekesh or Anderson which speaks to a possible combination teaches away from the present invention and suggests the use of a non-aqueous electrolyte as opposed to an aqueous electrolyte." The examiner notes that the combination made is adding titanium dioxide as taught by Bekesh to the nickel oxide electrodes of Anderson not replacing the nickel oxide with titanium oxide and therefore Anderson's mention of titanium dioxide be less desirable when used alone is irrelevant.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-16 & 19-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugnaux et al. (2004/0131934) in view of Anderson et al. (5,963,417).

In regards to claim 1,

Sugnaux '934 discloses an electrochemical cell comprising a cathode, an anode and an electrolyte, wherein: the anode comprises titanium dioxide or a lithium titanate (fig. 4; [0039] & [0075]); the electrolyte comprises a solution containing lithium ([0087]). Sugnaux '934 fails to explicitly disclose the electrolyte comprises an aqueous solution containing hydroxide ions.

Anderson '417 discloses an electrochemical cell comprising a cathode, an anode and an electrolyte, wherein: the electrolyte comprises an aqueous solution containing lithium and hydroxide ions (C10:L42-44).

It would have been obvios to one of ordinary skill in the art at the time the invention was made to use the electrolyte of Anderson '417 as the electrolyte of Sugnaux '934 as such a combination is a mere substitution requiring only routine skill in the art. It has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

In regards to claim 2,

The references as applied above disclose all the limitations of claim 2 except the titanium dioxide or lithium titanate is mesoporous. However, Sugnaux '934 further discloses the titanium dioxide or lithium titanate is mesoporous ([0075]).

In regards to claim 3,

The references as applied above discloses the claimed invention except for the mesoporous titanium dioxide or lithium titanate has a periodic arrangement of substantially uniformly sized pores of cross-section of the order of 10^{-8} to 10^{-9} m. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the mesoporous titanium dioxide or lithium titanate to have a periodic arrangement of substantially uniformly sized pores of cross-section of the order of 10^{-8} to 10^{-9} m, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In regards to claim 4,

The references as applied above disclose all the limitations of claim 4 except the positive electrode is formed of a mesoporous material. However, Sugnaux '934 further discloses the cathode is formed of a mesoporous material (title & [0075]).

In regards to claim 5,

The references as applied above disclose all the limitations of claim 5 except the mesoporous material is a metal, a metal oxide, a metal hydroxide, a metal oxy-hydroxide or a combination of any two or more of these. However, Sugnaux '934 further discloses the mesoporous material is a metal, a metal oxide, a metal hydroxide, a metal oxy-hydroxide or a combination of any two or more of these ([0049]).

In regards to claim 6,

The references as applied above disclose all the limitations of claim 6 except the mesoporous material comprises a metal selected from: nickel; alloys of nickel, nickel/cobalt alloys and iron/nickel alloys.

Anderson '417 discloses the mesoporous material comprises a metal selected from: nickel; alloys of nickel, nickel/cobalt alloys and iron/nickel alloys (C8:L9-14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add nickel oxide as taught by Anderson '417 in the electrode of Sugnaux '934 to obtain a capacitor with a good specific capacitance and a low leakage current.

In regards to claim 7,

The references as applied above disclose all the limitations of claim 7 except the metal is nickel.

Anderson '417 discloses the metal is nickel (C8:L9-14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add nickel oxide as taught by Anderson '417 in the electrode of Sugnaux '934 to obtain a capacitor with a good specific capacitance and a low leakage current.

In regards to claim 8,

The references as applied above disclose the claimed invention except for the mesoporous structure of the cathode and/or anode has a pore diameter within the range from 1 to 10 nm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the mesoporous structure of the cathode and/or anode to have a pore diameter within the range from 1 to 10 nm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In regards to claim 9,

The references as applied above discloses the claimed invention except for t the mesoporous structure of the cathode and/or anode has a pore number density of from $4x10^{11}$ to $3x10^{13}$ pores per cm^2. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the mesoporous structure of the cathode and/or anode to have a pore number density of from $4x10^{11}$ to $3x10^{13}$ pores per cm^2, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In regards to claim 10,

The references as applied above disclose the claimed invention except for at least 85% of the pores in the mesoporous structure of the cathode and/or anode have pore diameters to within 30%. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have at least 85% of the pores in the mesoporous structure of the cathode and/or anode have pore diameters to within 30% of the average pore diameter, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In regards to claim 11,

The references as applied above disclose all the limitations of claim 11 except the mesoporous structure of the cathode and/or anode has a hexagonal arrangement of pores that are continuous through the thickness of the electrode. However, Sugnaux '934 further discloses the mesoporous structure of the cathode and/or anode has a hexagonal arrangement of pores that are continuous through the thickness of the electrode ([0051]).

In regards to claim 12,

The references as applied above disclose the claimed invention except for the hexagonal arrangement of pores has a pore periodicity of in the range from 5 to 9 nm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the hexagonal arrangement of pores to have a pore periodicity of in the range from 5 to 9 nm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In regards to claim 13,

The references as applied above disclose all the limitations of claim 13 except the mesoporous structure of the cathode and/or anode is a film having a thickness in the range from 0.5 to 5 micrometers. However, Sugnaux '934

further the mesoporous structure of the cathode and/or anode is a film having a thickness in the range from 0.5 to 5 micrometers ([0040]).

In regards to claim 14,

The references as applied above disclose all the limitations of claim 14 except the mesoporous structure of the cathode and/or anode has a cubic arrangement of pores that are continuous through the thickness of the electrode. However, Sugnaux '934 further discloses the mesoporous structure of the cathode and/or anode has a cubic arrangement of pores that are continuous through the thickness of the electrode ([0051]).

In regards to claim 15,

The references as applied above disclose all the limitations of claim 15 except the titanium dioxide or lithium titanate is nanoparticulate. However, Sugnaux '934 further discloses the titanium dioxide or lithium titanate is nanoparticulate ([0051]).

In regards to claim 16,

The references as applied above disclose all the limitations of claim 16 except the anode comprises titanium dioxide. However, Sugnaux '934 further discloses the anode comprises titanium dioxide ([0040]).

In regards to claim 19,

The references as applied above disclose all the limitations of claim 19 except the electrolyte comprises an aqueous solution of lithium hydroxide.

Anderson '417 discloses the electrolyte comprises an aqueous solution of lithium hydroxide (C10:L42-44).

It would have been obvios to one of ordinary skill in the art at the time the invention was made to use the electrolyte of Anderson '417 as the electrolyte of Sugnaux '934 as such a combination is a mere substitution requiring only routine skill in the art. It has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

In regards to claim 20,

The references as applied above disclose all the limitations of claim 20 except is a battery. However, Sugnaux '934 further discloses is a battery ([0060]).

In regards to claim 21,

The references as applied above disclose all the limitations of claim 21 except is a supercapacitor. However, Sugnaux '934 further discloses is a supercapacitor ([0060]).

In regards to claim 22,

The references as applied above disclose the claimed invention except for the mesoporous structure of the cathode and/or anode has a pore diameter within the range from 2.0 to 8.0 nm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the mesoporous structure of the cathode and/or anode to have a pore diameter within the range from 2.0 to 8.0 nm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In regards to claim 23,

The references as applied above discloses the claimed invention except for t the mesoporous structure of the cathode and/or anode has a pore number density of from $1x10^{12}$ to $1x10^{13}$ pores per cm^2. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the mesoporous structure of the cathode and/or anode to have a pore number density of from $1x10^{12}$ to $1x10^{13}$ pores per cm^2, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In regards to claim 24,

The references as applied above disclose the claimed invention except for at least 85% of the pores in the mesoporous structure of the cathode and/or anode have pore diameters to within 10%. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have at least 85% of the pores in the mesoporous structure of the cathode and/or anode have pore diameters to within 10% of the average pore diameter, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In regards to claim 25,

The references as applied above disclose the claimed invention except for at least 85% of the pores in the mesoporous structure of the cathode and/or anode have pore diameters to within 5%. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have at least 85% of the pores in the mesoporous structure of the cathode and/or anode have pore diameters to within 5% of the average pore diameter, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

5. Claims 1 & 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zaghib et al. (2004/0202934) in view of Anderson '417.

In regards to claim 1,

Zaghib '934 discloses an electrochemical cell comprising a cathode, an anode and an electrolyte, wherein: the anode comprises titanium dioxide or a lithium titanate; the electrolyte comprises a solution containing lithium (abstract & [0134]). Zaghib '934 fails to explicitly disclose the electrolyte comprises an aqueous solution containing hydroxide ions.

Anderson '417 discloses an electrochemical cell comprising a cathode, an anode and an electrolyte, wherein: the electrolyte comprises an aqueous solution containing lithium and hydroxide ions (C10:L42-44).

It would have been obvios to one of ordinary skill in the art at the time the invention was made to use the electrolyte of Anderson '417 as the electrolyte of Zaghib '934 as such a combination is a mere substitution requiring only routine skill in the art. It has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

In regards to claim 17,

The references as applied above disclose all the limitations of claim 17 except the anode comprises a lithium titanate. However, Zaghib '934 further discloses the anode comprises a lithium titanate ([0134]).

In regards to claim 18,

The references as applied above disclose all the limitations of claim 18 except the lithium titanate is $Li_4Ti_5O_{12}$. However, Zaghib '934 further discloses the lithium titanate is $Li_4Ti_5O_{12}$ ([0134]).

In regards to claim 19,

The references as applied above disclose all the limitations of claim 19 except the electrolyte comprises an aqueous solution of lithium hydroxide.

Anderson '417 discloses the electrolyte comprises an aqueous solution of lithium hydroxide (C10:L42-44).

It would have been obvios to one of ordinary skill in the art at the time the invention was made to use the electrolyte of Anderson '417 as the electrolyte of Zaghib '934 as such a combination is a mere substitution requiring only routine skill in the art. It has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

In regards to claim 20,

The references as applied above disclose all the limitations of claim 20 except is a battery. However, Zaghib '934 further discloses is a battery ([0015]).

In regards to claim 21,

The references as applied above disclose all the limitations of claim 21 except is a supercapacitor. However, Zaghib '934 further discloses is a supercapacitor ([0015]).

6. Claims 1, 4-10, 13, 19, & 21-25 rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson '417 in view of RU2170467C1 hereafter referred to as Bekesh.

In regards to claim 1,

Anderson '417 disclose an electrochemical cell comprising a cathode, an anode and an electrolyte, wherein: and the electrolyte comprises an aqueous solution containing lithium and hydroxide ions (claim 21 & C10:L42-44). Anderson '417 fails to disclose the anode comprises titanium dioxide or a lithium titanate.

Bekesh discloses adding titanium dioxide to the electrodes of a double layer capacitor (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add titanium dioxide as taught by Bekesh to the electrodes of Anderson '417 to obtain electrodes with improved moisture absorption and enhanced specific power.

In regards to claim 4,

The references as applied above disclose all the limitations of claim 4 except the cathode is formed of a mesoporous material. However, Anderson '417 further discloses the cathode is formed of a mesoporous material (C4:L2-10).

In regards to claim 5,

The references as applied above disclose all the limitations of claim 5 except the mesoporous material is a metal, a metal oxide, a metal hydroxide, a metal oxy-hydroxide or a combination of any two or more of these. However, Anderson '417 further discloses the mesoporous material is a metal, a metal oxide, a metal hydroxide, a metal oxy-hydroxide or a combination of any two or more of these (C4:L2-10).

In regards to claim 6,

The references as applied above disclose all the limitations of claim 6 except the mesoporous material comprises a metal selected from: nickel; alloys of nickel, nickel/cobalt alloys and iron/nickel alloys. However, Anderson '417 further

discloses the mesoporous material comprises a metal selected from: nickel; alloys of nickel, nickel/cobalt alloys and iron/nickel alloys (C8:L9-14).

In regards to claim 7,

The references as applied above disclose all the limitations of claim 7 except the metal is nickel. However, Anderson '417 further discloses the metal is nickel (C8:L9-14).

In regards to claim 8,

The references as applied above disclose all the limitations of claim 8 except the mesoporous structure of the cathode and/or anode has a pore diameter within the range from 1 to 10 nm. However, Anderson '417 further discloses the mesoporous structure of the cathode and/or anode has a pore diameter within the range from 1 to 10 nm (C10:L59-60).

In regards to claim 9,

The references as applied above discloses the claimed invention except for t the mesoporous structure of the cathode and/or anode has a pore number density of from $4x10^{11}$ to $3x10^{13}$ pores per cm^2. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the mesoporous structure of the cathode and/or anode to have a pore number density of from $4x10^{11}$ to $3x10^{13}$ pores per cm^2, since it has been held that where

the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In regards to claim 10,

The references as applied above discloses the claimed invention except for at least 85% of the pores in the mesoporous structure of the cathode and/or anode have pore diameters to within 30% of the average pore diameter. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have at least 85% of the pores in the mesoporous structure of the cathode and/or anode have pore diameters to within 30%, of the average pore diameter, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In regards to claim 13,

The references as applied above disclose all the limitations of claim 13 except the mesoporous structure of the cathode and/or anode is a film having a thickness in the range from 0.5 to 5 micrometers. However, Anderson '417 further discloses the mesoporous structure of the cathode and/or anode is a film having a thickness in the range from 0.5 to 5 micrometers (C9:L24-26).

In regards to claim 19,

The references as applied above disclose all the limitations of claim 19 except the electrolyte comprises an aqueous solution of lithium hydroxide. However, Anderson '417 further discloses the electrolyte comprises an aqueous solution of lithium hydroxide (C10:L42-44).

In regards to claim 21,

The references as applied above disclose all the limitations of claim 21 except is a supercapacitor. However, Anderson '417 further discloses is a supercapacitor (title).

In regards to claim 22,

The references as applied above disclose all the limitations of claim 22 except the mesoporous structure of the cathode and/or anode has a pore diameter within the range from 2.0 to 8.0 nm. However, Anderson '417 further discloses the mesoporous structure of the cathode and/or anode has a pore diameter within the range from 2.0 to 8.0 nm (C10:L59-60).

In regards to claim 9,

The references as applied above discloses the claimed invention except for t the mesoporous structure of the cathode and/or anode has a pore number density of

from $4x10^{11}$ to $3x10^{13}$ pores per cm^2. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the mesoporous structure of the cathode and/or anode to have a pore number density of from $4x10^{11}$ to $3x10^{13}$ pores per cm^2, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In regards to claim 22,

The references as applied above discloses the claimed invention except for at least 85% of the pores in the mesoporous structure of the cathode and/or anode have pore diameters to within 30% of the average pore diameter. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have at least 85% of the pores in the mesoporous structure of the cathode and/or anode have pore diameters to within 30%, of the average pore diameter, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In regards to claim 23,

The references as applied above discloses the claimed invention except for t the mesoporous structure of the cathode and/or anode has a pore number density of

from $1x10^{12}$ to $1x10^{13}$ pores per cm^2. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the mesoporous structure of the cathode and/or anode to have a pore number density of from $1x10^{12}$ to $1x10^{13}$ pores per cm^2, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In regards to claim 24,

The references as applied above disclose the claimed invention except for at least 85% of the pores in the mesoporous structure of the cathode and/or anode have pore diameters to within 10%. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have at least 85% of the pores in the mesoporous structure of the cathode and/or anode have pore diameters to within 10% of the average pore diameter, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

In regards to claim 25,

The references as applied above disclose the claimed invention except for at least 85% of the pores in the mesoporous structure of the cathode and/or anode

have pore diameters to within 5%. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have at least 85% of the pores in the mesoporous structure of the cathode and/or anode have pore diameters to within 5% of the average pore diameter, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

USPAT 5,429,893

USPAT 6,275,371

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID M. SINCLAIR whose telephone number is (571)270-5068. The examiner can normally be reached on Mon - Thurs. 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JAYPRAKASH N. GANDHI can be reached on (571) 272-3740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. M. S./
Examiner, Art Unit 2835
/Eric Thomas/
Primary Examiner, Art Unit 2835